83936
S/188/60/000/004/013/014
B005/B060

9.2530

AUTHOR: D'yakov, G. P.

TITLE: Relation Between Magnetostriction and Magnetization in the Range Near Saturation

PERIODICAL: Vestnik Moskovskogo universiteta. Seriya 3, fizika, astronomiya, 1960, No. 4, pp. 97-99

TEXT: The general form of the law governing the approach of magnetization to the saturation value is known from the comprehensive studies made by N. S. Akulov, Gans, L. V. Kirenskiy, and L. I. Slobodskoy on magnetization in the region of strong magnetic fields. If in the region of very strong magnetic fields there exists a relation between magnetostriction and magnetization, magnetostriction can be calculated from the magnetization known from the above law. The bulky calculations that are otherwise needed to determine magnetostriction can thus be dispensed with. The attempt made by the author of the present paper in 1947 - 1948 to find such a relation between magnetostriction

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and magnetization was unsuccessful as regards the large class of anisotropic materials. The required relation could be found only for materials that were isotropic with respect to magnetostriction ($\lambda_{100} = \lambda_{111}$) (λ being the magnetostriction, 100 and 111 the Miller indices). In this special case, the magnetostriction λ of a single crystal can be calculated from its magnetization I. The following relations hold: $\lambda = \lambda_s(1 - 3\theta^2/2)$ (3) and $I = I_s(1 - \theta^2/2)$ (4) ($\lambda_s = \lambda_{100} = \lambda_{111}$; ϑ = angle between $\vec{H}$ and spontaneous magnetization $\vec{I}_s$). These equations hold only for the range near the saturation value of magnetization. For polycrystalline materials, θ^2 in equations (3) and (4) must be replaced by the mean value $\bar{\vartheta}^2$. $\bar{\vartheta}^2$ depends on amount and direction of the magnetic field strength, on the anisotropy constants k_1 and k_2, and on the elastic stresses F. Kirenskiy and Slobodskoy (Ref. 1) calculated magnetization in the region of strong magnetic fields as dependent on the above-mentioned factors; the respective equation is given. $\bar{\vartheta}^2$ can be calculated from this equation. The following equation

Relation Between Magnetostriction and Magnetization in the Range Near Saturation

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is eventually obtained for the magnetostriction λ:
$\lambda = \lambda_s(1 - (B_u/H^2) - C_u/H^3)$ (9). B_u and C_u are complicated functions of k_1, k_2, λ_s, F, and I_s, which are noted. For the special case F = 0 and k_2 = 0, equation (9) can be considerably simplified:
$\lambda = \lambda_s(1 - (8k_1^2 / 35I_s^2H^2) - 576k_1^3 / I_s^3H^3)$ (10). This equation had been previously obtained by the author (Ref. 3) by direct calculation. There are 3 Soviet references.

ASSOCIATION: Moskovskiy universitet Kafedra obshchey fiziki (Moscow University, Chair of General Physics)

SUBMITTED: April 18, 1960

Card 3/3

84653
S/115/60/000/010/008/028
B021/B058

9.6180

AUTHORS: Yugov, V. A. and D'yakov, G. P.

TITLE: Film Tensiometers for Measuring the Magnetostriction of Ferrites

PERIODICAL: Izmeritel'naya tekhnika, 1960, No. 10, pp. 31-32

TEXT: Wire-type resistance strain gauges were used for measuring magnetostriction. Layers of glue and the insulating support in the tensiometers restrict a further increase of measuring precision. The successful application by the authors of film tensiometers for measuring the magnetostriction of nickel permitted to develop this method with reference to ferrites, thus making it possible to improve somewhat and simplify the design of film tensiometers. The finished strain gauges were subjected to artificial aging, in order to stabilize the properties. Magnetostriction was measured by G. P. D'yakov's method. Data for the ferrite samples No. 7 and No. 73 are mentioned next. The film tensiometers operate stably even at comparatively great temperature fluctuations. Since the sensitive layer is applied directly to the ferrite surface

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Film Tensiometers for Measuring the Magnetostriction of Ferrites

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B021/B058

without glue and supports, errors which are observed in glued-on tensiometers during heating do not affect the precision of measurements. It became possible to study the temperature dependence of the magnetostriction of ferrites, as the layers of nichrome and some other alloys show high stabilities up to 300-400°C. There are 7 references: 5 Soviet and 1 British.

Card 2/2

25807
S/048/61/025/005/021/024
B117/B201

24,2200

AUTHORS: Yugov, V. A., and D'yakov, G. P.

TITLE: Using thin films for measuring magnetostrictive and other deformations

PERIODICAL: Akademiya nauk SSSR. Izvestiya. Seriya fizicheskaya, v. 25, no. 5, 1961, 647-650

TEXT: The present investigation was the subject of a lecture delivered at a symposium on thin ferromagnetic films (Krasnoyarsk, July 4 to 7, 1960). The authors developed a new type of strain gauge for the measurement of magnetostriction, in which the main shortcomings of earlier types were completely eliminated. The resistance strain gauges were provided by thin films of constantan and other materials sputtered in vacuum onto the specimens concerned. The first experiments were conducted on an oxidized nickel disk. The oxide layer is formed under the following conditions: the nickel disks are heated in an electric furnace up to 800-850°C and hold at this temperature for 30-40 minutes, whereupon they are quickly cooled in the air. The oxide layer forming in this connection exhibits

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Using thin films for measuring...

good insulating properties and is closely connected to the nickel. It was established (Ref. 5: Bryukhatov N. L., D'yakov G. P., Sb. "Primeneniya ul'traakustiki k issledovaniyu veshchestva", Izd. MOPI, vyp. 7, 111 (1958)) that the presence of such a layer does not impair the physical properties of the material. Before sputtering the film a mica form or a foil of shape or size required for the strain gauge is applied onto the desired nickel disk. Certain difficulties are met when bringing about the contact between the feed wires and the strain gauge. For this purpose, silver- or gold electrodes were additionally sputtered in vacuum onto the ends of the pick-up. For silver electrodes the contact was brought about with the aid of Wood's alloy; for gold electrodes, with the aid of a gallium alloy. The measurements of magnetostriction performed with these disks have shown that the novel strain gauge type ensures reliable results. For the measurement of magnetostriction, the strain gauges were connected to one of the arms of a d-c bridge circuit. A sensitive mirror galvanometer serves as indicator in the bridge diagonal. The bridge was compensated without a magnetic field. When the magnetic field was spplied, a change occurred in the specimen dimensions and in the resistance of the strain gauge owing to magnetostriction. The bridge compensation was outbalanced thereby. Due to

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the deviations of the galvanometer it is possible to calculate the magnitude of magnetostriction from formula

$$\lambda = \Delta R_E/(1+2\sigma)R\cdot(\alpha/\beta)$$

(ΔR_E - calibrating resistance; β - deviation of galvanometer caused by calibrating resistance; R - resistance of strain gauge; σ - Poisson's ratio of strain gauge material; α - deviation of galvanometer due to magnetostriction). The successful application of film-shaped non-glued strain gauges of nickel magnetostriction (Ref. 1: D'yakov G. P., Yugov V. A., Vestn. Mosk. un-ta, № 5, 229 (1957), and Ref. 6: D'yakov G. P., Yugov V. A., Vestn. Mosk. un-ta, № 3, 237 (1958)) permitted this method to be worked out for ferrites. Nichrome and constantan were first chosen as materials for the expansion-sensitive layer. These layers are sputtered in vacuum. In addition, a linear vaporizer is used (Ref. 7: Bochkareva V. A., Avt. svid. № 16907 ot 18 aprelya 1941 g.). To obtain a uniform layer, the diameters of thin tungsten-, nichrome-, or constantan wires (0.1-0.3 mm), wound around a thick (0.8-1.2 mm) tungsten wire, must be uniform. Sputtering must take place

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Using thin films for measuring....

in a determined temperature range (Ref. 8: Holland L., Vacuum Deposition of Thin Films, London, 1956), so as to conserve the quantitative composition of the alloy in the layer. The feed wire to the measuring device was prepared in the following manner: conductive coin-shaped silver pieces are burned into the ferrite specimen. Wires or narrow strips are soldered onto them. Experiments have shown that the electric contact between the nichrome layer and silver is not sufficiently stable. The contact resistance is sometimes higher than the layer resistance. To avoid this, it has been necessary to use additional contact layers. They are likewise sputtered in vacuum onto the expansion-sensitive layer. The finished strain gauges are subjected to artificial aging to allow their properties to stabilize: heating up of the specimens at 200-300°C within 8 to 4 hours, passage of current (10-20 ma) within 8 hours. The following data were found for two ferrite specimens: specimen no 7: ferrite $MgFe_2O_4$; $\rho > 10^9$ ohms cm; film expansion pick-up made of nichrone, resistance of pick-ups 828 ohms; magnitude of striction $6.25 \cdot 10^{-6}$, $I_s = 85$ Gs. Specimen no. 73: ferrite $NiFe_2O_4$; $\rho \geq 2 \cdot 10^8$ ohms cm; film expansion pick-up

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made of nichrome; resistance of pick-ups 285 ohms; magnitude of striction $11.0 \cdot 10^{-6}$; $I_s = 240$ Gs. Film strain gauges display a stable operation even at relatively strong temperature fluctuations. Since the sensitive layer is placed directly on the ferri-type layer, no errors impair the accuracy of measurement, as usually arise with glued strain gauges during heating. Due to the high temperature stability of nichrome-, platinum-, iridium-, and other layers applied, it is possible to study the magnetostriction of ferrites (from -190° to 300°C) and the striction of piezoelectric substances depending on temperature. Data relative to these measurements will be reported separately. N. S. Akulov is mentioned. There are 2 figures and 9 references: 8 Soviet-bloc and 1 non-Soviet-bloc.

ASSOCIATION: Kafedra obshchey fiziki Fizicheskogo fakul'teta Moskovskogo gos. universiteta im. M. V. Lomonosova (Department of General Physics of the Division of Physics, Moscow State University imeni M. V. Lomonosov)

S/058/61/000/012/070/083
A058/A101

AUTHOR: D'yakov, G.P.

TITLE: Taking domain structure into account when calculating magnetostriction

PERIODICAL: Referativnyy zhurnal. Fizika, no. 12, 1961, 386, abstract 12E708 (V sb. "Magnitn. struktura ferromagnetikov", Novosibirsk, Sib. otd. AN SSSR, 1960, 21 - 23)

TEXT: Magnetostriction in cubic ferromagnetic single crystals was calculated with due regard for the assumption that specimens definitely have a domain structure, as was expressed by Néel (Néel, L., J. Phys. Rad., 1944, no. 5, 241) and experimentally substantiated by Bates and Mee (Bates, L.F. and Mee, C.D., Proc. Phys. Soc., 1952, no. A64, 129, 140).

L. Sobolev

[Abstracter's note: Complete translation]

Card 1/1

24.2300

S/058/62/000/003/075/092
A061/A101

AUTHOR: D'yakov, G. P.

TITLE: Present state of the study of parity effects in the range approaching saturation

PERIODICAL: Referativnyy zhurnal, Fizika, no. 3, 1962, 71, abstract 3E528 (Sb. "Magnitn. struktura ferromagnetikov", Novosibirsk, Sib. otd. AN SSSR, 1960, 227 - 231)

TEXT: This is a brief review of the author's investigations on magnetostriction in strong magnetic fields. Results of an investigation of $d\lambda/dH$ on polycrystalline specimens from electrolytic Ni and Armco iron in the range approaching saturation are presented. $(d\lambda/dH) \cdot H^2$ was found to be a linear function of $1/H$. The values of λ_{100} and λ_{111} calculated from experimental data are in good agreement with those obtained from direct measurements on single crystals of the substances examined. It is noted that the control of the specimen texture is important when using the law of the approach to saturation.

L. Vinokurova

[Abstracter's note: Complete translation]

Card 1/1

Dyakov, G.S.

AUTHOR: Sukhov, A. I., Docent SOV/154-58-2-15/22

TITLE: Chronicle (Khronika) III

PERIODICAL: Izvestiya vysshikh uchebnykh zavedeniy. Geodeziya i aerofotos"yemka, 1958, Nr 2, pp 110-111 (USSR)

ABSTRACT: This is a report on the deliberations held from April 21 to 26 by the engineers and department heads of the technical supervision of geodetical activities of the Central Administration Interior of the USSR (Department of the GUGK (Head of Administration of Geodesy and Cartography). S. G. Sudakov: "On the New Tasks of the GUGK With Respect to the Perfecting of Topographical and Geodetic Work of Importance to the National Economy, Such as the Analysis of the Accuracy of Measurements in Triangulations of the 2nd and 3rd Classes, and the Application of Optical Range Finders in Geodetic Work." U. S. Ugarskiy, Candidate of Technical Sciences, reported on: "Some Results of the Study of Centers and Bearing Points Within the Territory of the USSR." Engineer P. I. Furnes: "New Geodetical Instruments for Topographical Photographs." Engineer S. G. Gavrilov: "The Technical Planning of New Geodetical and Topographic Surveys." Engineer B. V. Troitskiy: "Marking Points for the Preparation of Surveys." Engineer I. V. Kiylov: "Analytical Methods for the Determination of Bench and Height Marks." Engineer S. I. Turov: "On the Overall Preparations for Aerial Photographs." E. D. Zaprudov: "The Checking of Stereotopographical Surveys in the AGP-Mbacor." N. I. Konenin, Professor, Doctor of Technical Sciences: "The Use of Elements of Outer Orientation in the Photometrical Preparation of Aerial Photographs and Improvements in the Accuracy of Stereoscopic Measurements." G. A. Kraghennikov, Candidate of Technical Sciences: "Some Remarks on the Brzyzher-Stereograph." V. Ya. Nikhay, Candidate of Technical Sciences: "On Improving the Photographic Quality of Aerial Photos." Engineer Kashlai: "Camera Work in Field-Partitioning in the Severo-Kavkaz-AGP." G. S. Dyakov: "On the Present State of Technical Instruction for Geodetic Work." Furthermore the meeting dealt with the envisaged rationalisation of the new geographic-geodetic technique (GUGK 1957). Lively discussions followed the lectures. On April 28 the head engineers of the AGP and the collaborators of the MIIGA i K (Moscow Engineering Institute of Geodesy, Aerophotography, and Cartography) discussed some questions relating to the work at the Institutes of Geodesy (Lecture by P. S. Zakatov, Professor, Doctor of Technical Sciences).

Card 2/3

D'YAKOV, G. S.

"On the Stage of Technical Studies at Aerial Surveying Enterprises".

report presented at a Conference of the Chief Engineers and Directors of the Technical Control of Aerial Surveying Enterprises, Moscow Central Bureau of Surveying and Cartography, Min. of Interior USSR.
(Geodeziya i kartografiya, 1958, no. 6, 77-78)

Mbr. of the staff of: GUGK

KHETAGUROV, Nikolay Iosifovich; D'YAKOV, G.S., red.; KHROMCHENKO, F.I., red.izd-va; ROMANOVA, V.V., tekhn.red.

[Booklet on safety measures for geodesists and topographers working in high-mountain regions] Pamiatka po tekhnike bezopasnosti dlia geodezistov i topografov pri rabotakh v vysokogornykh raionakh. Moskva, Izd-vo geodez.lit-ry, 1960. 31 p. (MIRA 13:11)

(Surveying--Safety measures) (Mountaineering)

D'YAKOV, G.S.; SHTYRBUL, V.F.

Further in every possible way the increase of the number of participants in the movement for communist labor among the personnel of the State Geodetic and Cartographic Service. Geod. i kart. no. 10:3-6 O '60. (MIRA 13:12)

(Surveying) (Cartography)

D'YAKOV, G.S., otv. za vypusk; VASIL'YEVA, N.N., tekhn. red.

[Regulations on safety measures and industrial sanitation in the performance of operations of protective tree planting on railroads] Pravila po tekhnike bezopasnosti i proizvodstvennoi sanitarii pri proizvodstve rabot po zashchitnym lesnym nasazhdeniiam na zheleznodorozhnom transporte (TsP 2124). Moskva, Transzheldorizdat, 1961. 63 p. (MIRA 15:4)

1. Russia (1923- U.S.S.R.) Glavnoye upravleniye puti i sooruzhen[illegible].
(Railroads--Safety measures) (Industrial hygiene)

MINAYEV, Georgiy Aleksandrovich; SHAT'KO, Nina Ivanovna; D'YAKOV, G.S., retsenzent; POVALYAYEV, P.I., dots., retsenzent; PROKOF'YEV, F.I., dots., retsenzent; KULIKOV, A.A., starshiy prepodavatel', retsenzent; YUROV, S.I., red.; KOMAR'KOVA, L.M., red. izd-va; ROMANOVA, V.V., tekhn. red.

[Safety engineering in topographic and geodetic work]Tekhnika bezopasnosti na topografo-geodezicheskikh rabotakh. Moskva, Geodezizdat, 1962. 226 p. (MIRA 15:9)
(Surveying—Safety measures)

KOZHEVNIKOV, N.P.; D'YAKOV, G.S.; KOSAREV, A.P.; KOLIBAYEV, V.A.

Methodology of performing a stereotopographic survey at a 1:25,000 scale in desert and sandy regions. Geod.i kart. no.4: 36-40 Ap '62. (MIRA 15:12)
(Aerial photogrammetry)

KULIKOV, A., kand.tekhn.nauk; ZYATIN, N., inzh.; D'YAKOV, I., inzh.

Controlling the icing of streetcar rails. Zhil.-kom.khoz. 10 no.9:12-14 '60. (MIRA 13:9)
(Street railways--Cold weather operation)

VOL'YEROV, G.B.; D'YAKOV, I., uchenik IX klassa

New method for the laboratory production of nitric oxide.
Khim. v shkole 16 no.2:78-79 Mr-Ap '61. (MIRA 14:6)

1. Chelyabinskiy Dvorets pionerov. Shkola No.84 (for D'yakov).
(Nitrogen oxide)

D'YAKOV, I.; KASHLAKOV, M.; NOSENKOV, M.; SYSOYEV, V.

Motor vehicles of the ZIL-133 family. Avt. transp. 42 no.7: 42-44 Jl '64. (MIRA 17:11)

1. Moskovskiy avtomobil'nyy zavod im. Likhacheva.

DYAKOV, IVAN D.

Fulfilling the Plan During the Third Quarter. Elektroenergiya (Electric Power), #10:1:Oct 55, Bulg. Publ.

DYAKOV, IVAN D.

Arrangement and Application of Network Analyzers. Elektroenergiya (Electric Power), #10:3:Oct 55, Bulg. Publ.

40418
S/056/62/043/003/019/063
B102/B104

AUTHORS: Aleksandrov, B. N., D'yakov, I. G.

TITLE: Variation of the electrical resistivity of pure metals with decrease of temperature

PERIODICAL: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 43, no. 3(9), 1962, 852-859

TEXT: In order to verify a prediction of the modern theory of metals, namely the law $\varrho(T) \sim T^5$ at low and $\varrho(T) \sim T^2$ at ultralow temperatures, the authors measured the $\varrho(T)$ dependence of very pure Sn, In, Al, Pb, Zn and Cd samples in the form of wires with 2-4 mm diameter. For In these samples were polycrystalline. For Al they were single crystals with the wire axis parallel to the main axis or $\parallel[110]$. For Sn, Cd, Zn they were single crystals with the wire axis either parallel or perpendicular to the main axis. In all cases the resistivity of the wire material, $\varrho_{4.2}$, was higher than that of the massive material, the excess being least for Pb (4 %) and most for $Zn_{\perp}$ (55 %). The resistance of the samples was measured

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with a ППТН-1 (PPTN-1) low-resistance compensator with a sensitivity of $\sim 10^{-8}$ v. The measurements were made between 1.65 and 14°K. The resistivity was calculated from the relative resistance $\delta_T = R_T/R_{293}$, R_{293} being the sample resistance at 293°K. The accuracy of the δ-measurements at 4.2°K was between 1 and 10 %, for Pb $\ll$ 1 %. For $\delta(T)$ the law $\delta = \delta_o + AT^n$ was assumed and A and n were determined from the measurements. For In, $Sn_{\parallel}$, $Sn_{\perp}$ and Cd $\delta = \delta_o + AT^{5\pm0.05}$, and only for Al in the range $20 \leqslant T \leqslant 58$°K was $n = 4.6 \pm 0.1$. Therefore for Al at $T \leqslant 58$°K, the law $\varrho = \varrho_o + AT^2 + BT^5$ can be assumed; whilst for Sn at $T \leqslant 12$°K, for In at $T \leqslant 10$°K and for Cd at $T \leqslant 14$°K, $\varrho \sim T^5$. For Zn $n = 4.9 \pm 0.1$ at $T \leqslant 19$°K, for Pb $n = 5 \pm 0.1$. The temperature of 1.65°K was not low enough to observe any $\sim T^2$ law. The decrease of the factor A with increasing purity explains the $n < 5$ results obtained by many authors as an impurity effect. There are 6 figures and 4 tables.

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Variation of the electrical...

ASSOCIATION: Fiziko-tekhnicheskiy institut Akademii nauk Ukrainskoy SSR (Physicotechnical Institute of the Academy of Sciences Ukrainskaya SSR)

SUBMITTED: April 20, 1962

Card 3/3

40673

S/126/62/014/002/011/018
E114/E435

AUTHORS: Aleksandrov, B.N., D'yakov, I.G.

TITLE: Zone refining of aluminium and lead

PERIODICAL: Fizika metallov i metallovedeniye, v.14, no.2, 1962, 267-270

TEXT: The initial materials were of high purity, the aluminium being 99.997%, containing less than 10^{-3}% Fe, 9 x 10^{-4}% Si and 5 x 10^{-4}% Cu; the lead 99.994%, containing less than 4 x 10^{-3}% Bi, 1 x 10^{-3}% Mg, Zn, Sn, Fe, 5 x 10^{-4}% Cu, As, Sb, 3 x 10^{-4}% Ag and 2 x 10^{-4}% Ca, Na. The purity was determined by the ratio (δ) of the electrical resistance of 4.2°K to that at 20°C. The lead was treated in a lightly oxidized tantalum boat and the aluminium in a boat of electrode graphite. Heating was carried out in quartz tubes, using multiple resistance heaters which gave liquid zones 55 to 60 mm long with Al and 40 to 50 mm long with Pb. The lead was refined in vacuo, the aluminium in a helium atmosphere. The rates of traverse were 10 mm per hour for Al and 25 mm per hour for Pb. With Al, 16 to 18 passes were employed and a single crystal was usually obtained, but with Pb the number of passes varied from 10 to 65 and single crystals were never obtained.

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S/126/62/014/002/011/018
E114/E435

Zone refining of aluminium and lead

Curves showing the variation of δ along the length of the bar after refining were obtained. For aluminium, it was shown that there were no impurities with $K > 1$ in the first part of the purified zone extending for 50% of the length; the number of passes required was 16 or less. For lead, however, the optimum number of passes was 65 or more and the purified zone was only 25% of the total length. In further experiments with lead, specimens were refined with 35 passes and the pure portions of several bars were combined and further zone refined with an additional 50 to 60 passes; 50% of the final bar was then of high purity. A list of the impurities which are difficult to remove by zone refining gives those for aluminium as Cr, Mn ($K \sim 1$), Ti, V ($K > 1$) and Bi, Mg ($K = 0.3$ to 0.6) and for lead as Sn ($K = 0.7$) and Sb, Bi, Mg, Na ($K = 0.4$ to 0.6). There are 2 figures and 2 tables.

SUBMITTED: November 28, 1961

Card 2/2

S/126/62/014/004/013/017
E193/E383

AUTHORS: Aleksandrov, B.N. and D'yakov, I.G.

TITLE: Purification of technical-grade cadmium by vacuum distillation with the application of a preheated condenser

PERIODICAL: Fizika metallov i metallovedeniye, v. 14, no. 4, 1962, 569 - 573

TEXT: The object of the present investigation was to establish the conditions under which vacuum-distillation would yield cadmium as pure as the material obtained by the more expensive method of zone-refining. The chemical analysis and the purity ($\delta = R_{4.2}/R_{288}$, where R is the electrical resistivity at 4.2 and 288 °K, respectively) of the starting materials are given in Table 1. Distillation was carried out in a vacuum of about 10^{-4} mm Hg in a distillation column placed under a glass bell. The construction of the column is shown schematically in Fig. 1; its main parts were a quartz crucible provided with an electric-resistance heater and a tantalum condenser whose lower

Purification of ....

part (approximately 1/3 of its length) could also be heated to various temperatures. The area of the condenser was about ten times that of the area of the melt. The experimental conditions varied as follows. The temperature of the metal: 315 - 505 °C; temperature of the lower part of the condenser: 165 - 280 °C; temperature gradient between the lower and upper part of the condenser: 0 - 55 °C. The effect of the temperature on the effectiveness of the method studied is demonstrated in Fig. 2, where the purity of the condensed metal (8×10^5) is plotted against the distance (h, mm) from the lower end of the condenser; the figures and the bottom and top of each of the three curves indicate, respectively, the temperature of the lower part of the condenser and the temperature of the molten metal. Several conclusions were reached. 1) 99.99994% pure cadmium ($\delta = 4.2 \times 10^5$) can be obtained by vacuum distillation. 2) The optimum temperature of the melt is 450 - 500 °C. 3) Preheating the condenser to 280 °C brings about an increase in the purity

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Purification of ....

and yield of the condensate. 4) Up to 80% of the starting material can be distilled without the purity of the condensate being adversely affected. The purity of the condensate sharply decreases on increasing this quantity to 95%.
There are 3 figures and 2 tables.

SUBMITTED: November 28, 1961

Table 1: (Sledy = traces)

Материал	Pb	Zn	Cu	Ni	Fe	Cd	$\delta \cdot 10^6$
Cd-I	0,014	0,003	0,008	—	Следы	99,975	50
Cd-II	0,011	0,004	0,006	0,002	Следы	99,977	6

Card 3/4

ACCESSION NR: AP4017368 S/0126/64/017/002/0303/0305

AUTHOR: D'yakov, I. G.; Khvedchuk, I. R.

TITLE: Purification of lithium by zone melting

SOURCE: Fizika metallov i metallovedeniye, v. 17, no. 2, 1964, 303-305

TOPIC TAGS: lithium, lithium purification, zone melting

ABSTRACT: Using apparatus described in an earlier article (FMM, 1961, 11, 588), a sample of 99.3% lithium (0.01% K, 0.03% Ca, 0.2% Na, 0.03% Mg, 0.05% Si, 0.03% N, 0.009% Al, 0.003% Fe and 0.005% Mn) was purified in an atmosphere of helium by a repeated (12 and 20 times) crystallization process. The lithium obtained was estimated, from its relative conductivity, to be more than 99.95% pure. A chemical analysis of the product showed that Na, Mn, Ca, Fe, and Cu were more readily removed than Al, while Mg and Si were found to be "harmful" impurities, since they were difficult to remove. "The authors would like to thank Ye. V. Lifshits for performing the qualitative chemical analysis and L. S. Kiryakov for his technical assistance." Orig. art. has: 1 graph.

ASSOCIATION: Khar'kovskiy fiziko-tekhnicheskiy institut AN SSSR (Khar'kov Physico-technical Institute)

Card 1/2

ACCESSION NR: AP4017368

SUBMITTED: 01Jun63 ENCL: 00

SUB CODE: MM NO REF SOV: 004 OTHER: 003

Card 2/2

ACCESSION NR: AP4025914 S/0056/64/046/003/0831/0832

AUTHORS: D'yakov, I. G.; Lazarev, B. G.; Matsakova, A. A.; Ovcharenko, O. N.

TITLE: Critical magnetic fields of superconducting niobium films

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 46, no. 3, 1964, 831-832

TOPIC TAGS: niobium, superconducting niobium, superconductivity, critical magnetic field, field depth of penetration, niobium film, superconducting niobium film, superconducting bulk niobium, critical superconducting temperature

ABSTRACT: Thin (20 and 50 micron) superconducting niobium films were produced by condensation on pyrex glass or on mica with silver contacts prepared beforehand. The results are of interest since they permit an estimate of the depth of penetration of the field in

Card 1/2

ACCESSION NR: AP4025914

niobium (~10^{-4} cm, about one order of magnitude higher than in "soft" superconductors) and show that the high critical fields in niobium alloys are due to thin superconducting paths in the alloys. The precautions taken to reduce the effect of gas impurities are briefly described. The critical field for the 50 micron film was about 25,000 Oe, about 10 times that for bulk niobium. The field for the 20 micron film is much higher but could not be measured with the available external magnetic field (22,000 Oe). The transitions temperatures for the 20 and 50 micron films were 6.5 and 7.5K respectively as against 9.1K for bulk niobium, indicating that the films were still not sufficiently pure. Orig. art. has: 1 figure.

ASSOCIATION: Fiziko-tekhnicheskiy institut AN UkrSSR (Physico-technical Institute, AN UkrSSR)

SUBMITTED: 27Aug63 DATE ACQ: 16Apr64 ENCL: 01

SUB CODE: PH NO REF SOV: 004 OTHER: 004

Card 2/2

L 32607-66 EWT(m)/EWP(t)/ETI IJP(c) JD/JG/GD

ACC NR: AT6010591 SOURCE CODE: UR/0000/65/000/000/0163/0168

33
B+1

AUTHOR: Amonenko, V. M.; Kruglykh, A. A.; Pavlov, V. S.; D'yakov, I. G.; Balenko, E. P.

ORG: Physicotechnical Institute, AN SSSR (Fiziko-tekhnicheskiy institut AN SSSR)

TITLE: On the possibility of purifying cerium by zone recrystallization

SOURCE: AN UkrSSR. Fazovyye prevrashcheniya v metallakh i splavakh (Phase transformations in metals and alloys). Kiev, Naukova dumka, 1965, 163-168

TOPIC TAGS: metal zone refining, cerium, recrystallization, zone melting

ABSTRACT: The object of the study was to determine the distribution of impurities (lanthanides, silicon, magnesium, iron, and copper) in cerium during zone melting of the latter. The process was carried out at 3×10^{-6} mm Hg on cerium which had first been remelted for one hour at 1423K at the same pressure. The molten zone was produced by electron bombardment, and its travel rate was varied from 5 to 0.15 mm/min. The refining process turned out to be most efficient at a rate of 0.5 mm/min. However, zone melting is not effective in removing other rare earth metals from cerium. Iron, copper, and silicon impurities are driven to the end of the ingot and have a distribution coefficient $K < 1$. After ten passes, the iron content decreases by a factor of 5, and the silicon and copper contents decrease by a factor of 10. Magnesium is removed chiefly by vaporization as the zone moves

Card 1/2

L 32607-66

ACC NR: AT6010591 0

along the sample. Orig. art. has: 3 figures and 2 tables.

SUB CODE: // / SUBM DATE: 07Oct64 / ORIG REF: 003 / OTH REF: 002

Card 2/2 lo

ACC NR: AP5023768 SOURCE CODE: UR/0089/65/019/003/0269/0272

AUTHOR: Azhazha, V. M.; D'yakov, I. G.; Papirov, I. I.; Tikhinskiy, G. F.

ORG: none

TITLE: Change in beryllium properties during aging

SOURCE: Atomnaya energiya, v. 19, no. 3, 1965, 269-272

TOPIC TAGS: beryllium, beryllium powder, beryllium property, beryllium heat treatment

ABSTRACT: The effect of aging on the mechanical properties of beryllium at elevated temperatures and the relationship between the mechanical properties and electrical resistance of aged beryllium have been studied. Hot-compacted commercial-grade (99.64%) beryllium specimens with a density of 1.844 g/cm^3, a tensile strength of 23 and 13 to 13.5 kg/mm^2 and an elongation of 1 and 10.5% at 20 and 600C, respectively, were homogenized at 1100C for 15 min, cooled to 800C at a rate of 100C per min, to 600C at a rate of 20C per min, and to room temperature at a rate of 5C per min, and then aged at 700, 750, 800, and 850C for 4, 40, or 100 hr. It was found that aging increases the ductility of beryllium, especially at high temperatures (see Fig. 1). The tensile strength of aged specimens was 16—17 kg/mm^2 at 400C and 13—14 kg/mm^2 at 600C; it decreased to 11.4—11.8 kg/mm^2 for specimens aged at 800—850C. Yield strength for all tested specimens varied in the range 8.5—9.5 kg/mm^2, but dropped to 7.8 kg/mm^2 after aging at 700C for 100 hr. Curves showing the dependence of elongation and elec-

UDC: 546.45

ACC NR: AP5023768

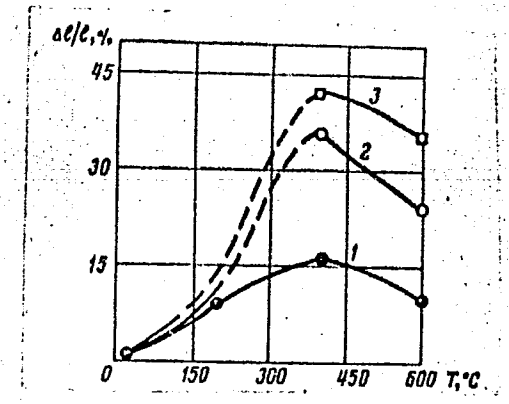


Fig. 1. Temperature dependence of beryllium (1) homogenized, (2) aged at 750C for 40 hr; and (3) aged at 700C for 100 hr.

trical resistance on aging time are similar; resistance decreases proportionally to the increase in elongation. Orig. art. has: 6 figures and 1 table. [AZ]

SUB CODE: MM, AS/SUBM DATE: 25Aug64/ ORIG REF: 003/ OTH REF: 000/ ATD PRESS: 4/28

BVK
Card 2/2

L 56070-65 EWT(m)/EWP(w)/EWA(d)/T/EWP(t)/EWP(k)/EWP(b)/EWA(c) Pf-4

ACCESSION NR: AP5013815 IJP(c) JD/HW/JG UR/0126/65/019/005/0788/0790
539.292; 548.0 : 537

[illegible]akov, I. G.; Papirov, I. I.; Tikhinskiy, G. F.

TITLE: [illegible]sidual electrical resistance of beryllium

SOURCE: [illegible] metallov i metallovedeniye, v. 19, no. 5, 1965, 788-790

TOPIC TAGS: residual resistance, beryllium purity, [illegible], beryllium foil, beryllium distillate, [illegible] beryllium, [illegible] meter, PPTN-1 potentiometer

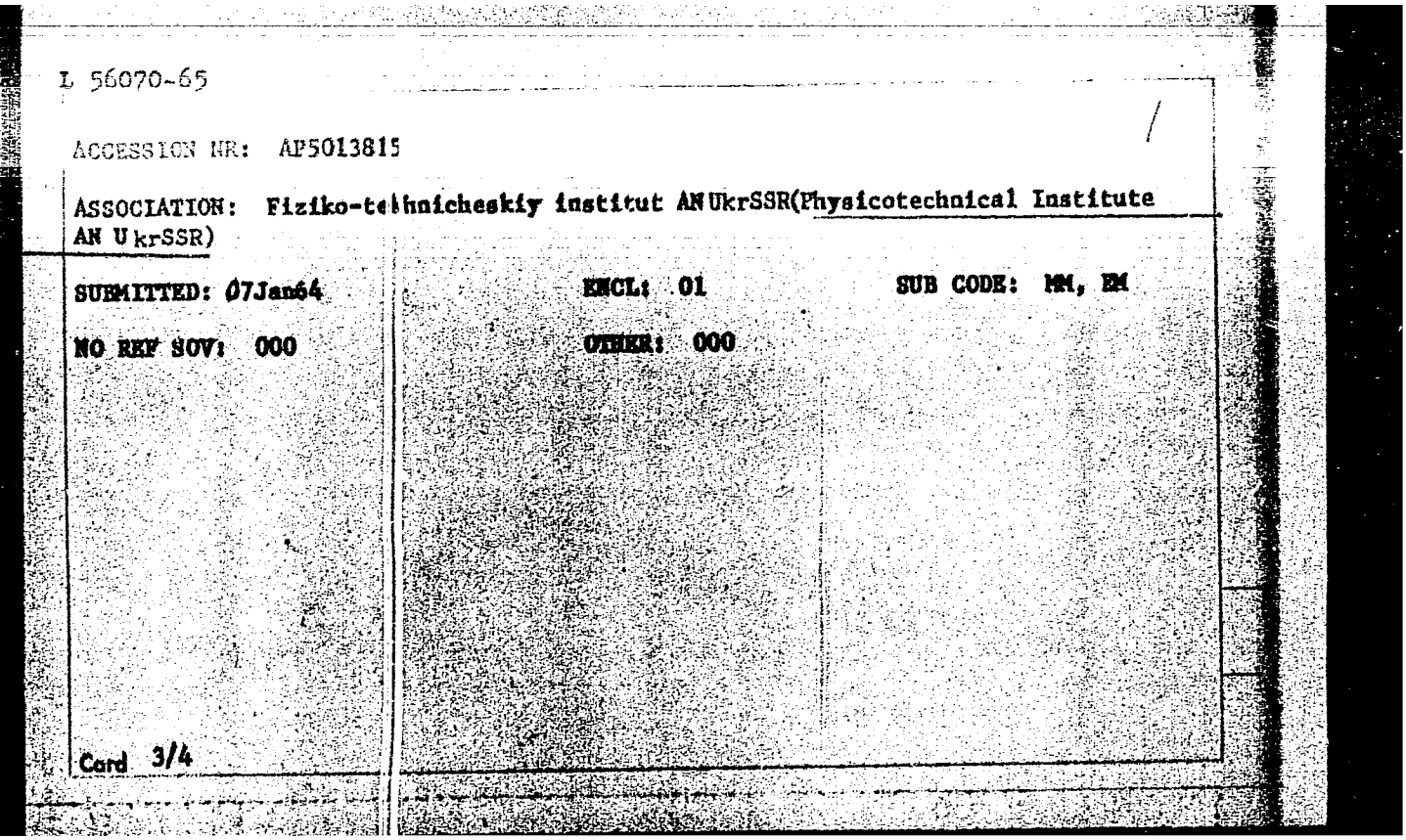
ABSTRACT: [illegible]ough some information on measurements [illegible] resistance [illegible] available in the literature, no [illegible] purity of this metal and [illegible] is determined the [illegible] of purity. The measurements [illegible] connection method with [illegible] measurement error [illegible] of beryllium (all polycrystalline, [illegible] measured: foil, distillate, vacuum-cast [illegible]

Card 1/2

ACCESSION NR: AP5013815

extruded, zone-refined. The measurements were performed at a temperature of [illegible]. Prior to this, all specimens were vacuum-annealed (10^{-5} mm Hg) at [illegible], with subsequent slow cooling. Such [illegible] specimens was needed for a better [illegible] It was found that variations in the [illegible] due to a change in the state of impurities [illegible] residual resistance. The purity of the metal was determined using [illegible] residual resistance $\delta = \rho_0/\rho_{room}$, where ρ_{room} is resistance [illegible] temperature. The use of δ makes it possible to dispense with [illegible] dimensions of the specimens. On the basis of calculated readings [illegible] different types of beryllium, δ was plotted as a function of the [illegible] purity of the investigated specimens [illegible]. It is shown that as the purity of Be increases, δ may begin to be affected by the size [illegible] of the grains. The data presented indicate that the method of [illegible] purity by measuring residual resistance is extremely precise and [illegible] as well as quick. Preliminary investigations show that for maximum [illegible] this may be done at the boiling point of oxygen (90.1°K) [illegible] really pure -- even at the boiling point of [illegible]°K. [illegible] has: 1 figure, 1 table.

Card 2/4



L 56070-65

ACCESSION NR: AP5013815

ASSOCIATION: Fiziko-tekhnicheskiy institut AN UkrSSR(Physicotechnical Institute AN UkrSSR)

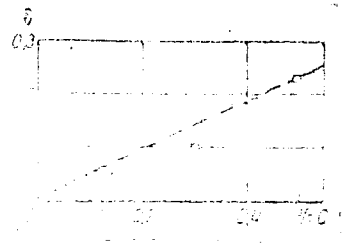
SUBMITTED: 07Jan64 ENCL: 01 SUB CODE: MM, EM

NO REF SOV: 000 OTHER: 000

Card 3/4

ACCESSION NR: AP5013815

ENCLOSURE: 01



Estimated relation of coolant resistance to chemical purity

Card 4/4

L 60111-65 EWT(m)/T/EWP(t)/EWP(b) IJP(c) JD/JG

ACCESSION NR: AP5016526 UR/0126/65/019/006/0848/0851
546.48 : 537.311.33

AUTHOR: D'yakov, I. G.; Papirov, I. I.; Tikhinskiy, G. F.

TITLE: The relationship between remanent resistance and heat treatment in beryllium with various degrees of purity

SOURCE: Fizika metallov i metallovedeniye, v. 19, no. 6, 1965, 848-851

TOPIC TAGS: beryllium, low temperature phenomenon, electric resistance, impurity content, precipitation, physical metallurgy

ABSTRACT: Precipitation of the surplus phase and its growth in Be of varying purity was studied by measuring the remanent resistance at liquid helium temperatures (4.2°K). It was shown that the effective temperature of aging of the metal depends on the quantity of impurities contained. Three series of Be samples were prepared: [illegible], 99.91% and 99.4% pure remanent. The resistance, defined as $\delta = (R_{4.2°K}/R_{293°K})$, was measured as a function of time for different aging temperatures (300-900°C). Prior to this, the samples were vacuum annealed at 1100°C for one hour in order to remove residual stresses, and to dissolve the impurities. All of the specimens ex-

Card 1/2

L 60441-65

ACCESSION NR: AP5016526

hibited aging, although the shape and location of the curves depended on the impurity content, and the effective aging temperature increased with rise in impurity content. Even highly pure beryllium (99.95%, $\delta = 9 \cdot 10^{-3}$), had a tendency toward aging accompanied by the appearance of regions with increased impurity concentrations. Therefore, this metal may be considered as a weak alloy. Orig. art. has: 4 figures.

ASSOCIATION: none

SUBMITTED: 04May64 ENCL: 00 SUB CODE: MM

NO REF SOV: 000 OTHER: 003

Card 2/2

L 11959-66 EWT(l)/EWT(m)/EWP(t)/EWP(b) IJP(c) JD/JG/GG

ACC NR: AP5026599 SOURCE CODE: UR/0056/65/049/004/1091/1093

AUTHORS: D'yakov, I. G.; Shvets, A. D.

ORG: Physicotechnical Institute, Academy of Sciences, Ukrainian SSR (Fiziko-tekhnicheskiy institut Akademii nauk Ukrainskoy SSR)

TITLE: Investigation of superconducting properties of molybdenum

SOURCE: Zhurnal eksperimental'noy i teoreticheskoy fiziki, v. 49, no. 4, 1965, 1091-1093

TOPIC TAGS: molybdenum, superconductivity, critical magnetic field, impurity conductivity, metal zone melting, electric resistance, temperature dependence

ABSTRACT: In view of the contradictory published data concerning the effect of purity and isotopic composition of molybdenum on its superconductivity, the authors investigated the superconducting properties of very pure molybdenum (~99.9999%, $R(4.2K)/R(293K = 6 \times 10^{-5}$) prepared by zone melting, using a technique described elsewhere (FMM, in press). The electrical resistance was measured by a null method with a circuit whose sensitivity was $\sim 1 \times 10^{-7}$ volt. Temperatures below 1K were obtained by pumping-on He^4 vapor. The critical temperature was found to

Card 1/2

L 11959-66

ACC NR: AP5026599 12

be 0.916K and the width of the transition region was 0.002K, in agreement with data previously obtained by B. T. Mattias et al. (Phys. Rev. v. 129, 1025, 1963). The same sample was used also to measure the temperature dependence of the critical magnetic field in an external longitudinal field, and it was found that the experimental points fit quite well a straight line when plotted in the coordinates proportional to the field and to the square of the temperature. Extrapolation yields a value of 86 Oe for the critical field at zero temperature. Impurities are shown to lower the value of the critical temperature. Authors thank T. A. Sverbilova of the Khar'kov State University for participating in the experiments, and Laboratory assistants L. S. Kiryakov and S. A. Shigimaga for preparing the samples and adjusting the apparatus. Orig. art. has: 1 figure.

SUB CODE: 20/ SUBM DATE: 26May65/ NR REF SOV: 005/ OTH REF: 006

Card 2/2

L 29361-66 EWT(m)/T/EWP(t)/ETI IJP(c) WW/JD/JG
ACC NR: AP6017311 (N) SOURCE CODE: UR/0126/66/021/005/0785/0786

AUTHOR: D'yakov, I. G.; Papirov, I. I.; Tikhinskiy, G. F.

ORG: Physicotechnical Institute, AN UkrSSR (Fiziko-tekhnicheskiy institut AN UkrSSR)

TITLE: Aging of beryllium-chromium and beryllium-zirconium alloys

SOURCE: Fizika metallov i metallovedeniye, v. 21, no. 5, 1966, 785-786

TOPIC TAGS: beryllium, beryllium alloy, chromium containing alloy, zirconium containing alloy, aging, alloy aging

ABSTRACT: Beryllium alloys containing 0.3%Cr or 0.3%Zr melted from 99.99%-pure Be, 99.7%-pure Cr and 99.9%-pure iodide Zr were rolled in vacuum at 900C, homogenized at 1050C for 40 min, cooled at a rate of 40 deg/hr, and aged at 500—900C for 1—100 hr. The criterion of aging was the relative residual electrical resistance: $\delta = R_{4.2K}/R_{20C}$. Homogenized Be-0.3%Cr and Be-0.3%Zr alloys had a δ of $(5.4—59)\cdot10^{-2}$ and $(6.3—6.5)\cdot10^{-2}$, respectively. The optimum aging temperatures, corresponding to a minimum δ, were 600 and 625—650C for Be-0.3%Zr and Be-0.3%Cr alloys, respectively. The absolute decrease of δ in aging Be-0.3%Cr alloy was close to the decrease of δ for the initial distilled Be, which indicated a practically complete precipitation of Cr from the

Card 1/2 UDC: 546.3—19'45'76'831 : 620.187

L 29361-66
ACC NR: AP6017311

matrix with aging. In Be-0.3%Zr alloy, zirconium apparently not only completely precipitated from the matrix, but also promoted precipitation of other impurities. Complete segregation of Cr and Zr occurred in 4 hr at 650—700C and in 1 hr at 800C. At temperatures higher than 825C (for Be-Cr alloy) and 850C (for Be-Zr alloy) decomposition of the secondary phases begins, which leads to an increase in the electrical resistance. The solubility limit of Cr in Be-0.3%Cr alloy and of Zr in Be-0.3%Zr alloy is at a temperature above 850 and 900C, respectively. [MS]
Orig. art. has: 1 figure and 1 table.

SUB CODE: 11, 13/ SUBM DATE: 26Jul65/ ORIG REF: 002/ OTH REF: 001
ATD PRESS: 5009

Card 2/2 cc

L 40023-66 EWT(m)/EWP(t)/ETI IJP(c) JD/JG

ACC NR: AP6019827 (N) SOURCE CODE: UR/0370/66/000/001/0071/0072

AUTHOR: Kovtun, G. P. (Kharkov); Kruglykh, A. D. (Kharkov); D'yakov, I. G. (Kharkov)

ORG: none

33
B

TITLE: Zone refining of molybdenum

SOURCE: AN SSSR. Izvestiya. Metally, no. 1, 1966, 71-72

TOPIC TAGS: metal zone refining, molybdenum

ABSTRACT: The effect of certain parameters of zone recrystallization (speed of travel of the liquid zone, number of passes) on the degree of refining of molybdenum was studied. The metal purity was determined by measuring the ratio of the electrical resistance at room temperature to that at the temperature of liquid helium, $\rho = R_{295^\circ K}/R_{42^\circ K}$. The zone refining was done with a special electron-beam gun whose design is described. It was noted that the refining of molybdenum is due mainly to the vaporization of volatile impurities, and also to the mechanism of zone refining itself. The character of the distribution of impurities over the length of the specimen indicates that molybdenum contains many impurities with a distribution coefficient $K < 1$, such as carbon. A change in the speed of travel of the liquid zone from 1 to 5 mm/min does not appreciably affect the distribution of impurities along the specimen. Orig. art. has: 2 figures and 1 table.

SUB CODE: 11/ SUBM DATE: 07Jan65/ ORIG REF: 001/ OTH REF: 002

UDC: 669.284

Card 1/1

D'YAKOV, I.I.

PHASE I BOOK EXPLOITATION 299

D'yakov, Ivan Ivanovich, Chief Smelter, Moscow Secondary Aluminum Plant

Vysokiye s"yemy alyuminiya (High Yields of Aluminum) [Moscow] Moskovskiy rabochiy, 1957. 38 p. (Opyt novatorov Moskovskikh predpriyatiy) 3,000 copies printed.

Ed.: Gurov, S.; Tech. Ed.: Lil'ye, A.; Literary Collaborator: Novoselova, V.

PURPOSE: This booklet is intended for workers in nonferrous-metal foundries.

COVERAGE: This booklet describes the work methods of an outstanding work crew at the Moscowskiy zavod vtorichnogo alyuminiya (Moscow Secondary Aluminum Plant). This crew is stated to have achieved high yields of top quality secondary aluminum.

Card 1/2

High Yields of Aluminum (Cont.)

TABLE OF CONTENTS:

AVAILABLE: Library of Congress (TN 775.D5)

Card 2/2

LS/lsb
27 May 1958

D'YAKOV, I.V.

Using the State Standard 3450-60 in the manufacture of coal mining machinery. Standartizatsiia 26 no.7:36-37 Jl '62. (MIRA 15:7)
(Coal mining machinery—Standards)

D'YAKOV, I. Ya.

Selblocking clutch for the rear axle of the ZIL-164 automobile. Avt. prom. no.5:17-19 My '60. (MIRA 14:3)

1. Moskovskiy avtozavod imeni Likhacheva.
(Automobiles—Clutches)

D'YAKOV, I.Ya.

Method of comparative cross tests. Avt. prom. 30 no.11:13-14 N '64 (MIRA 18:2)

1. Moskovskiy avtozavod imeni Likhacheva.

L 01087-67

ACC NR: AP6026309 (A) SOURCE CODE: UR/0113/66/000/005/0008/0011

AUTHOR: D'yakov, I. Ya. (Candidate of technical sciences); Nosenkov, M. A. 22

ORG: Moscow Automobile Factory im. Likhachev (Moskovskiy avtozavod) B

TITLE: Effect of an interlocking differential on the skid resistance of a 4×2 truck

SOURCE: Avtomobil'naya promyshlennost', no. 5, 1966, 8-11

TOPIC TAGS: industrial truck, highway vehicle data, motion stability

ABSTRACT: An analysis of conventional methods for determining the resultant forces acting on the drive axle of a truck during skidding shows that these methods give stability indices lower than the actual values and that this divergence increases with the interlocking coefficient of the differential. A method is proposed for theoretically analyzing the skid resistance of a ZIL-130 truck with an interlocking clutch differential. The results show that the stability index is considerably dependent on road conditions. The use of an interlocking differential results in a slight improvement of skid resistance in the rear axle of the truck although the maximum improvement is only 4.5% so that the behavior of the vehicle is practically unaffected. The use of this type of differential improves the dynamic possibilities of the vehicle during motion on a turn since the entire trailer weight may be used for generating traction. An analysis of the theoretical stability characteristics shows that the coefficient

Card 1/2 UDC: 629.11.013:629.116.2.001.5

L 01087-67

ACC NR: AP6026309

for disruption of lateral stability reaches a maximum in 4th and 5th gears only on roads with an adhesion factor of less than 0.25. The theoretical data were verified by operational testing of ZIL-164 and ZIL-130 trucks with interlocking clutch differentials. The results indicate that replacement of bevel differentials with interlocking differentials has practically no effect on the stability of the vehicle. Orig. art. has: 5 figures, 20 formulas.

SUB CODE: 13/ SUBM DATE: None/ ORIG REF: 005

Card 2/2 vlr

D'YAKOV, K.A., professor

Features of renal mercury excretion in mercury therapy of syphilis.
Vest. ven. i derm. no.4:59-60 Jl-Ag '54. (MLRA 7:8)

1. Iz kliniki kozhnykh i venericheskikh bolezney Samarkandskogo meditsinskogo instituta.
(SYPHILIS) (MERCURY--THERAPEUTIC USE)

D'YAKOV, K.N., inzh.; SHKADRETSOV, I.Ye., inzh. (Leningrad).

Improving the subgrade. Put' i put. khoz. no.6:19-20 Je '58. (MIRA 11:6)
(Railroads--Track)
(Railroads--Earthwork)

D'YAKOV, K. N., Candidate Tech Sci (diss) -- "Investigation of the process of chasm-formation onthe railroads of northwestern USSR and measures to combat chasms". Leningrad, 1959. 18 pp (Min Transprtation USSR, Leningrad Order of Lenin Inst of Railroad Transport Engineers im Acad V. N. Obraztsov), 120 copies (KL, No 23, 1959, 166)

SHABALIN, G.I., inzh. (Leningrad); D'YAKOV, K.N., kand.tekhn.nauk (Leningrad); SHKADRETSOV, I.Ye., inzh. (Leningrad)

Electrochemical soil stabilization. Put' i put.khoz. 5 no.11:20-22 N '61. (MIRA 14:12)

1. Nachal'nik sluzhby puti, Leningrad (for Shabalin)
(Railroads—Track)
(Soil stabilization)

D'YAKOV, K.N.

Results of experiments in studying the migration of moisture in freezing ground by the use of radioactive emanations. Issl.po fiz. i mekh. merzl. grun. no.4:81-85 '61. (MIRA 14:12)
(Frozen ground)

D'YAKOV, K.N., kand.tekhn.nauk

Using diagrams of the intensity of heaving in the design of antiheaving devices. Sbor.trud.LIIZHT no.198:68-85 '62.
(MIRA 16:7)
(Railroad engineering)

D'YAKOV, K.P., inzh. (Leningrad)

Electrochemical soil stabilization in order to combat swelling.
Zhel. dor. transp. 40 no.9:71-73 S '58. (MIRA 11:10)
(Soil stabilization) (Railroads--Earthwork)

S/123/59/000/010/057/068
A004/A001

Translation from: Referativnyy zhurnal, Mashinostroyeniye, 1959, No. 10, p. 192, # 38694

AUTHOR: D'yakov, L.

TITLE: Rapid-Solidifying Mixtures in Foundry Production

PERIODICAL: Za industr. Ryasan' (Sovnarkhoz Ryasansk. ekon. adm. r-na), 1958, No. 8, pp. 16-18

TEXT: The practice of using rapid-solidifying mixtures at the Ryasanskiy stankozavod (Ryasan' Machine Tool Plant) showed that the employed binders should be divided into 3 groups according to the diminishing solidification rate of the mixtures: 1) water-glass, M, МФ-17 (MF-17); 2) СП (SP), СБ (SB), БК (BK), sulfite malt grains; 3) КТ. КТ binders for molds and SB binders for cores found the most widespread application. When using SB, the drying temperature should not exceed 220°C in order to prevent a drop in the mixture strength. Mixtures on a SB binder are hygroscopic. The same molding mixture containing 50% of K 50/100 sand, 45% of spent mixture and 5% of clay can be bound by the

Card 1/2

Rapid-Solidifying Mixtures in Foundry Production

binder: either 5% (over 100) of SB or 2% of KT with 1.5% (also over 100%) of sulfite malt grains. These mixtures have the following physical-mechanical properties: gas permeability = 50, compression strength limit of the green specimens = 0.25 - 0.4 kg/cm^2, tensile strength limit of the dry specimens is higher than 3 kg/cm^2, moisture = 4 - 5.5%. When a rapid-action technology is used, only a coating of 20 - 25 mm thickness of rapid-solidifying mixture can be applied. As a result, the duration of drying decreased: of the cores by 60%, and that of the molds by 5 - 10 times. Also water-glass with a module of 2.2 - 2.3 and a specific gravity of 1.46 - 1.52 gram/cm^3 is used. The molding mixture is composed of (in %): K 50/100 sand = 71, spent molding mixture = 20, sawdust = 1, caustic soda = 1, water-glass = 7, mazut = 0.5. The blowing-through of the mixtures containing water-glass is effected with CO_2 or with furnace gases containing 10 - 12% CO_2.

Z. N. V.

Translator's note: This is the full translation of the original Russian abstract.

Card 2/2

ZHELEV, V., prof.; DYAKOV, L., (Sofiya)

Specialized characteristics of morphological changes in the organs of guinea pigs infected by Mycobacterium tuberculosis bovis. Arkh. pat. no.7:45-48 '64. (MIRA 18:7)

1. Kafedra patologicheskoy anatomii (zav. - prof. V.Zhelev) Vyssheye veterinarnogo instituta, Bolgariya.

L 34007-65 EWT(d)/EWT(l)/EPA(s)-2/EWT(m)/EWP(e)/EPF(n)-2/EWP(c)/EWP(v)/EPA(w)-2/T/EWP(k)/EWP(b)/EWP(l) Pf-4/Pt-10/Pu-4/Pab-10 IJP(c) WH

ACCESSION NR: AP5007675 S/0032/65/031/003/0325/0327

AUTHORS: Karyakin, A. V.; Borovikov, A. S.; D'yakov, L. A.

TITLE: Luminescent defectoscopy of porous materials

SOURCE: Zavodskaya laboratoriya, v. 31, no. 3, 1965, 325-327

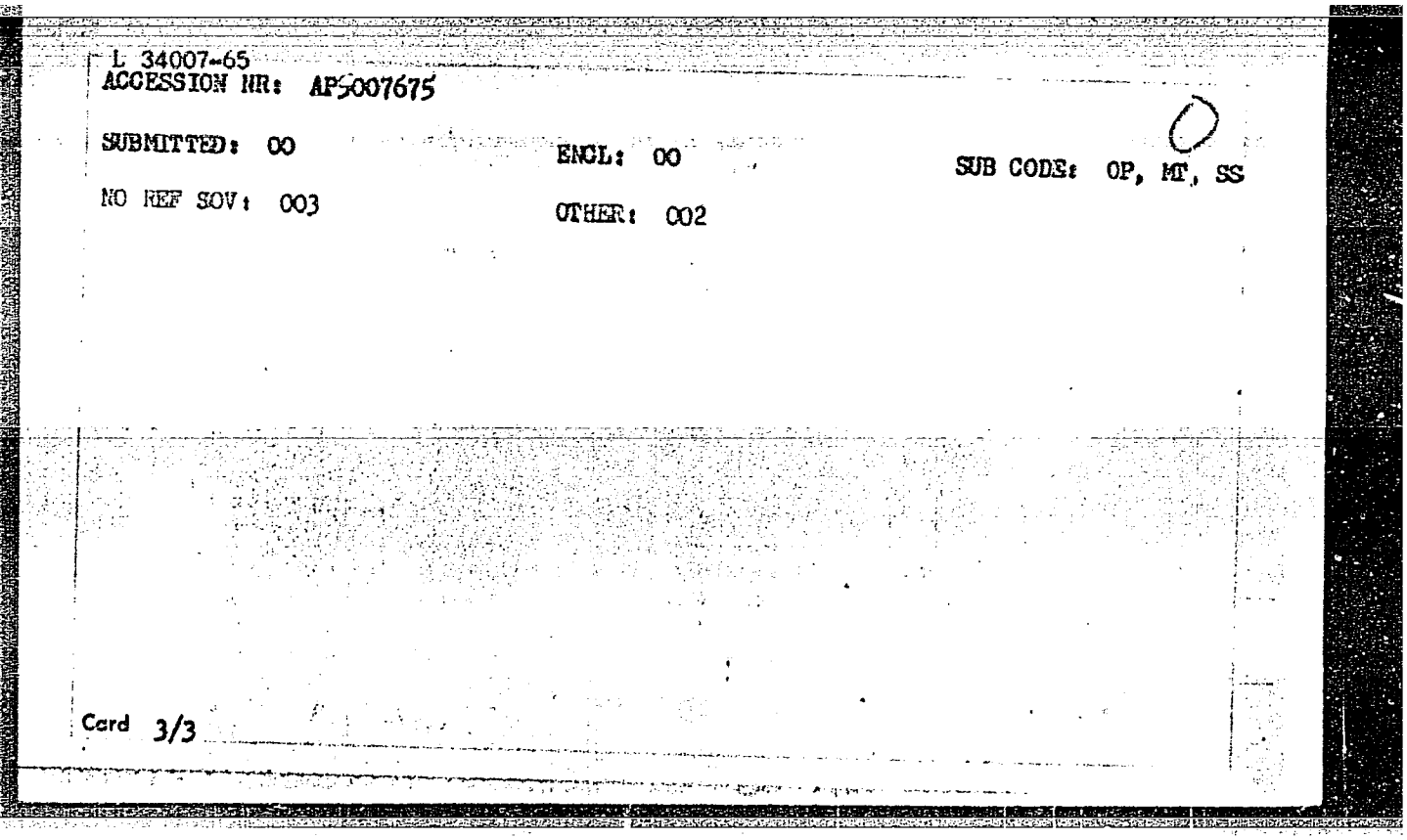
TOPIC TAGS: defectoscope, luminescence method, porous material/ OP 7 emulsifier, OP 10 emulsifier, UFS 6 light filter, DRSh 250 lamp

ABSTRACT: Luminescent and color defectoscopy has not been widely successful in the past for testing nonmetallic porous wares that are not amenable to electroinductive or ultrasonic testing. The porosity has generally produced a background that obscures surface defects. The authors tested a variety of materials and found that the luminescent method may be used if the type of porosity of the material is known. The type of porosity rather than size of pores is the determinative factor. Material with pores that do not interconnect (fired ceramics and glass) and material that does not become impregnated when soaked in liquid must be tested by the luminescent method developed for metals. Material with chiefly interconnected pores or fractures (many types of unfired ceramics and concrete) can be successfully tested by particle filtering. Best results are obtained by

Card 1/3

using particles that luminesce in either ultraviolet or daylight. The background is lowest with low surface density of pores. This value is near zero for metals, glasses, and glazed ceramics. For materials with interconnecting pores or fractures, it is necessary to determine the effective permeability of any liquid relative to the capillaries of the material. For concrete, insoluble organic luminophores, luminescent in both daylight and ultraviolet, suspended in water are satisfactory. The particles must be 5-10 times the average pore size of the test material. In this case the particles are generally 35-50 microns across. Generally 0.5-1 g of phosphorogen (such as enamel pigment) and 0.05-0.5 g of surface-active substance (such as OP-7 or OP-10 emulsifier) are suspended in one liter of water. The phosphorogen is ground in a ball mill (ceramic balls) and then mixed with a small amount of water and surface-active material to form a paste. This paste is then diluted to the required proportion. The suspension is applied to the test surface with an atomizer or a brush, or the material is dipped briefly in the suspension. After 30-60 seconds the surface is examined in ultraviolet light. Orig. art. has: 2 figures.

ASSOCIATION: Institut geokhimii i analiticheskoy khimii im. V. I. Vernadskogo (Institute of Geochemistry and Analytical Chemistry)



L 34007-65
ACCESSION NR: AP5007675

SUBMITTED: 00 ENCL: 00 SUB CODE: OP, MT, SS

NO REF SOV: 003 OTHER: 002

Card 3/3

[illegible]	: [illegible]	H
[illegible]	: [illegible] Technology. Chemical Products (Part 3). [illegible]	
Abs. Jour.	: Ref Zhur-Khim., 19[illegible], No 7, [illegible]	
Author	: [illegible]ov, N. L.	
Inst.	: -	
Title	: Sanitary Evaluation of [illegible] Animals Infected with [illegible]	
Orig. Pub.	: Khranit. prom-st, 195[illegible], [illegible], No 1, [illegible]	
Abstract	: No abstract.	

Card: 1/1

KARYAKIN, A.V.; BOROVIKOV, A.S.; D'YAKOV, L.A.

Luminescent flaw detection in the case of porous materials.
Zav.lab. 31 no.3:325-327 '65.
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A prefabricated grain storehouse. Gor.i sel'.stroi. no.7:17-18 Jl '57. (MLRA 10:10)
(Buildings, Prefabricated) (Warehouses)

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GUTMAN, Ye. I., redaktor; DZYUBA, M.L., redaktor; POLYANOVSKIY, V.M., redaktor; YUROVITSKIY, Ye. N., redaktor; ABROSIMOV, M.A., redaktor; GERASIMOV, P.K., redaktor; D'YAKOV, M.I., redaktor; SAVEL'YEV, B.V., redaktor; TSITSIN, N.V., redaktor; YAKUSHKIN, I.V., redaktor

[Collective farmer's calendar for 1948] Kalendar' kolkhoznika na 1948 god. [n.p.] Gos. izd-vo sel'khoz. lit-ry [n.d.] 78 p. (MLRA 10:4)

(Collective farms)

D'YAKOV, M.I., inzh.; RUSAKOV, Ye.N., inzh.

"Detsezol," heat insulating and soundproofing material. Stroi. mat. 6 no.12:26 D '60. (MIRA 13:11)
(Insulation (Heat)) (Soundproofing)

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24352 D'YAKOV, N. N. Elektrokardiograficheskaya kharakteristika khronicheskoy koronarnoy nedostatochnosti pri gipertonicheskoy bolezni. Trudy Nauch. vopros. Gospitalya Voorush. Sil SSSR im. akad. Burdenko. VIP. 6 L., 1949, S. 222-27. - Bibliogr: 9 nazv.

SO: Letopis', No. 32, 1949.

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Large block construction of boiler rooms in the Al'met'yevsk Petroleum Trust. Neftianik 5 no.6:19-20 Je '60.
(MIRA 13:7)

1. Glavnyy inzhener kontory energeticheskogo khozyaystva tresta Al'met'yevburneft'.
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D'YAKOV, N. K.

25658

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4. Arches

7. Problem of the stability of arches with superstructure. Trudy LIIVT No. 18, 1951.

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Calculating the strength of bridge arches taking into account the effect of the superstructure. Trudy LIIVT no.20:61-87 '53. (MIRA 12:1)

(Bridges, Arched)

D'YAKOV, M. MA.

"The Question of the Stability and Strength of Rod Constructions," Tr. Leningr. In-ta Inzh. Vodn. Trans., No 21, 1954, pp 96-125

Stability calculations for the following: separate rods with various fastenings at the ends under the action of axial compressing forces; a three-span unit beam on rigid supports loaded with compressing forces applied at the ends; a double-hinged arch-shaped frame and a two-layer two-span frame under the action of punctural loads. The work is based on an earlier article by N. Y. Kornoukov (Vestn. Inzh. i Tekhnikov, No 3, 1937). (RZhMekh, No 5, 1955) SO: Sum.No. 713, 9 Nov 55

124-57-2-2313

Translation from: Referativnyy zhurnal, Mekhanika, 1957, Nr 2, p 119 (USSR)

AUTHOR: D'yakov, M. Ya.

TITLE: Influence of a Superstructure on the Stability of an Arch (Vliyaniye nadarochnogo stroyeniya na ustoychivost' arki)

PERIODICAL: Tr. Leningr. in-ta inzh. vod. transp., 1955, Nr 22, pp 33-44

ABSTRACT: The critical loading of an arch with a superstructure is determined by means of the deformation method, wherein the columns are assumed to be rigidly connected with the arch. Six-and ten-panel hingeless arches are considered, also a six-panel two-hinged arch. The loadings are referred to the joints of the superstructures, in connection wherewith the arch is replaced by a discontinuous beam. The possibilities of some simplifications in the computations are indicated, which, however, remain cumbersome and complicated. Some figures are shown, resulting from numerical computations, showing the influence of a rigid joining of the columns of the superstructure on the magnitude of the critical loading of the arch. The formulations of various conclusions derived therein are inaccurate and may lead to misunderstandings (e. g., the assertion that "the

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124-57-2-2313

Influence of a Superstructure on the Stability of an Arch

superstructure can either increase or decrease the stability of an arch".)

A. A. Pikovskiy

1. Structures--Stability 2. Structures--Deformation 3. Structures--Mathematical analysis

Card 2/2

124-57-1-1109D

Translation from: Referativnyy zhurnal, Mekhanika, 1957, Nr 1, p 154 (USSR)

AUTHOR: D'yakov, M. Ya.

TITLE: The Stability of Arches With Superstructures (Ustoychivost' arok s nadarochnym stroyeniyem)

ABSTRACT: Bibliographic entry on the author's dissertation for the degree of Doctor of Technical Sciences, presented to the Leningr. in-t inzh. vod. transp. (Leningrad Institute for Water Transportation Engineering), Leningrad, 1956

ASSOCIATION: Leningr. in-t inzh. vod. transp. (Leningrad Institute for Water Transportation Engineering), Leningrad

1. Structure--Stability--Bibliography

Card 1/1

SOV/124-57-8-9500

Translation from: Referativnyy zhurnal. Mekhanika, 1957, Nr 8, p 132 (USSR)

AUTHOR: D'yakov, M. Ya.

TITLE: On the Influence Exerted by a Superstructure on the Stability of an Arch (K voprosu o vliyanii nadarochnogo stroyeniya na ustoychivost' arki)

PERIODICAL: Tr. Leningr. in-ta inzh. vodn. transp., 1956, Nr 23, pp 141-149; for first part of paper, see RZhMekh, 1957, abstract 2313.

ABSTRACT: The author describes a procedure wherein the slope-deflection method is used to calculate the critical load for a compression-stressed ten panel parabolic fixed arch having a superstructure. The equation for the stability of the arch contains a twelfth-order determinant, which reduces to a third-order determinant. The author investigates an arch wherein $I = I_0 \sec \phi$ (I_0 being the inertia moment at the key section) for cases in which the rise/span ratio (f/ℓ) equals 0.1, 0.2, and 0.25 respectively. The results of the calculations are given. In his treatment of the case wherein $f/\ell = 0.25$ the author erroneously concludes that the effect of the superstructure is to diminish the strength of the arch---which of course, directly contradicts the well-known thesis of A. N. Dinnik The cause of this error lies in the fact that in the author's comparisons the

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On the Influence Exerted by a Superstructure on the Stability of an Arch

actual critical load that he determines is that for pin-jointed stanchions, which means that he disregards the low stability of the long edge stanchions of the superstructure. Yet this very feature of these long edge stanchions, i.e., their low stability, is mentioned in the paper (p 149).

A. A. Pikovskiy

D'YAKOV, K.Ya., Doc Tech Sci — (diss) "~~Author's abstract~~ Author's abstract of dissertation on the subject "Stability of arches with a superarch structure" ~~for the~~ competition for a degree of Doctor of Technical Sciences. Len, 1959. 42 pp (Min of River ~~Navigation~~ Fleet RSFSR. Min of Water Transport), 150 copies. List of author's works, p 42 (11 titles) (KL,20-59, 127)

SELUYANOV, Mikhail Pavlovich, inzh.; DRABKIN, Grigoriy Matveyevich, inzh.; SAKHNOVSKIY, K.V., prof., doktor tekhn.nauk, retsenzent; D'YAKOV, M.Ya., kand.tekhn.nauk, nauchnyy red.; KAPLAN, M.Ya., red.izd-va; VORONETSKAYA, L.V., tekhn.red.

[Multistoried industrial buildings built of large construction elements] Mnogoetazhnye proizvodstvennye zdaniia iz krupnorazmernykh elementov. Leningrad, Gos.izd-vo lit-ry po stroit., arkhit. i stroit.materialam, 1959. 124 p. (MIRA 12:4)

1. Deystvitel'nyy chlen Akademii stroitel'stva i arkhitektury SSSR (for Sakhnovskiy).

(Factories--Design and construction)
(Precast concrete construction)

D'YAKOV, M.Ya., kand.tekhn.nauk, dotsent

Determining the coefficient of resistance for arches with superstructure. Trudy LIIVT no.26:151-168 '59. (MIRA 14:9)
(Arches)

D'YAKOV, M.Ya. (Leningrad)

Stability of a two-hinged arch with a tie rod and suspension rods.
Stroi.mekh.i rasch.soor. 3 no.2:35-38 '61. (MIRA 14:5)
(Arches)

D'YAKOV, M. Ya., doktor tekhn.nauk

Rigidity of an arch with a tie rod. Trudy LIVT no.15:3-9 '61.
(MIRA 14:10)
(Arches)

D'YAKOV, M.Ya. (Leningrad)

Stability of arches with superstructure. Stroi. mekh. i rasch. soor. 4 no.6:36-40 '62. (MIRA 16:1)
(Arches)

D'YAKOV, Mikhail Yudovich, akademik [deceased]; BELEN'KIY, N.G., obshchiy red.; DMITROCHENKO, A.P., prof., doktor sel'skokhoz. nauk, obshchiy red.; KONDYREV, V.Ye., kand.sel'skokhoz.nauk, obshchiy red.. V redaktirovanii prinimali uchastiye: GOLUBENTSOVA, Yu.V., kand.sel'skokhoz.nauk, nauchnyy sotrudnik, red. [deceased]; MYSYUTKINA, M.V., kand.sel'skokhoz.nauk, nauchnyy sotrudnik, red.; YEFIMOV, F.F., kand.sel'skokhoz.nauk, nauchnyy sotrudnik, red.; KABOZEV, S.M., kand.sel'skhokhoz.nauk, nauchnyy sotrudnik, red.. BEDNARSKAYA, G.A., red.; BALLOD, A.I., tekhn.red.

[Selected works in two volumes] Izbrannye sochineniia v dvukh tomakh. Moskva, Gos.izd-vo sel'khoz.lit-ry. Vol.1. 1959. 515 p. Vol.2., 1959. 647 p. (MIRA 13:1)

1. Vsesoyuznaya akdeniya sel'skokhoz.nauk im. V.I.Lenina (for D'yakov). 2. Deystvitel'nyy chlen Vsesoyuznoy akademii sel'skokhozyaystvennykh nauk imeni V.I.Lenina (for Belen'kiy). 3. Vsesoyuznyy nauchno-issledovatel'skiy institut kormleniya sel'skokhozyaystvennykh zhivotnykh (for Golubentseva, Mysyutkina, Yefimov, Kabozev).

(Agriculture)

D'YAKOV, N.

Concern for the working man. Zhil.-kom.khoz. 7 no.10:16 '57.
(MIRA 10:10)
(Kuybyshev--Apartment houses)

TARASOV-AGALAKOV N.; VOZYAKOV, V.; GOLUBEV, S.; LAVROV, D.; ANANOV, I.; GELAKH, V.; BOLANIN, N.; KASHCHENKO, V.; MAKAROV, M.; GOLOSTIN, M.; ZNAMENSKIY, N.; DZHALALOV, Ye.; GLEBOV, V.; CHELYSHEV, F.; D'YAKOV, N.; BRAUN, P.

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(Zhukov, Georgii Innokent'evich, d.in 1959)

L 08972-67 FSS-2/EWT(1)/EWT(m)/EWP(t)/ETI IJP(c) JGS/JD

ACC NR: AP6022064 SOURCE CODE: UR/0146/66/009/003/0120/0122

40

AUTHOR: Novikov, V. G.; D'yakov, N. F.

ORG: Leningrad Institute of Fine Mechanics and Optics (Leningradskiy institut tochnoy mekhaniki i optiki)

TITLE: Electrodynamic photoshutter

SOURCE: IVUZ. Priborostroyeniye, v. 9, no. 3, 1966, 120-122

TOPIC TAGS: photoshutter, electrodynamic photoshutter, motion picture camera, high speed photography

ABSTRACT: A new electrodynamic photoshutter intended for SSKS high-speed movie-cameras (developed in LITMO) is briefly described. The shutter operation is based on interaction between stationary electromagnets 5 (see figure) and movable coils 4. Light-weight duralumin shuttle 1 carrying vane 2 can move (8 mm) between stops 9 and 10. Coils 4 are connected in series and act

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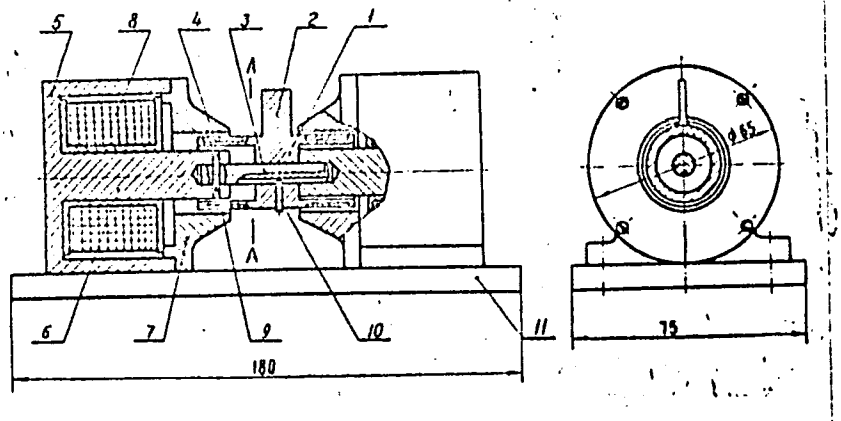
cumulatively. The shutter is controlled by a thyratron circuit which sends two-polarity pulses into coils 4 for opening and closing the 6 x 10-mm aperture. The complete vane-shift time is 0.8—0.9 msec. Orig. art. has: 3 figures.



SUB CODE: 13, 09 SUBM DATE: 21Apr65 / ORIG REF: 001

L 34363-66

ACC NR: AP6022212 SOURCE CODE: UR/0115/66/000/005/0089/0090

AUTHOR: Vasilevskaya, D. P.; Denisov, Yu. N.; D'yakov, N. I.

ORG: none

TITLE: Hall magnetometer

SOURCE: Izmeritel'naya tekhnika, no. 5, 1966, 89-90

TOPIC TAGS: magnetometer, Hall effect, magnetic field measurement

ABSTRACT: The magnetometer described (see Fig. 1) was developed at the Joint Institute of Nuclear Research. The device is based on the Hall effect and is designed for

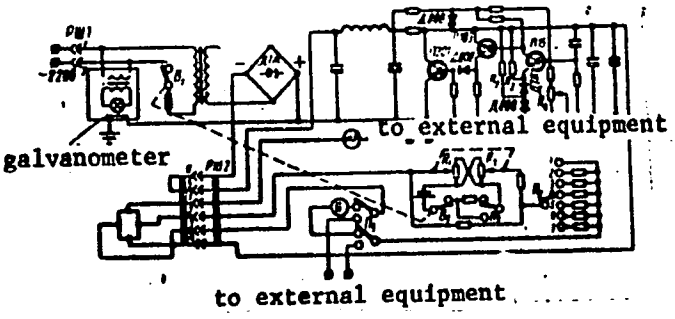


Fig. 1. Schematic diagram of Hall magnetometer

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ACC NR: AP6022212

measuring stationary magnetic fields and for determining their configurations. The device uses two InAs Hall pickups (5 x 3 x 0.2 mm in size) and is placed between felt paddings in ebonite housings 80 x 20 x 15 mm in dimensions. The sensitivity of the pickups is approximately 0.0015 μv/tesla and their longitudinal and transverse resistances are approximately 2 ohms. Power supply is provided from a stabilized d-c source, which has a voltage stabilization coefficient of 1000, a load stabilization coefficient of 500 and whose load current drift does not exceed $\pm 2 \cdot 10^{-3}$%. The comparison circuit uses a P15 triode, while a P103 silicon transistor is used in the additional amplifying stage. The voltage drop across avalanche diode D808 is used as reference voltage. The excitation current is regulated by potentiometer R_4 within 50—150 mamp. The entire range of measured magnetic fields of 0—2 tesla is subdivided into 7 bands. Switch P_2 sets the desired measurement band. The maximal sensitivity of the device is $1.2 \cdot 10^{-5}$ tesla with the "operating" and $0.83 \cdot 10^{-5}$ tesla with "stand-by" pickup per one division on the galvanometer scale. When Hall emf is measured with the M95 galvanometer the error of magnetic field measurements is ±0.8%. However, when Hall emf and the excitation current are controlled by the R307 potentiometer, the RMS measurement error is reduced to ±0.3%. The authors thank I. A. Kaplin and P. P. Gavrish for their assistance in the development of the instrument. Orig. art. has: 1 figure. [DW]

SUB CODE: 09/ SUBM DATE: none/ ORIG REF: 002/ ATD PRESS: 5033

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